



09/944 472

04 Co
#2
5-2-02
09-17-01
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

James J. Howarth

Serial No.: 09/994,472

Filed: August 30, 2001

For: METHOD OF BALL GRID ARRAY
(BGA) ALIGNMENT, METHOD OF
TESTING, ALIGNMENT APPARATUS
AND SEMICONDUCTOR DEVICE
ASSEMBLY

Examiner: Unknown

Group Art Unit: Unknown

Attorney Docket No.: 4348US
(MUEI-0547.00/US)

CERTIFICATE OF MAILING

I hereby certify that this paper or fee along with any attachments referred to or identified as being attached or enclosed is being deposited with the United States Postal Service as First Class Mail (under 37 C.F.R. § 1.8(a)) on the date of deposit shown below with sufficient postage and in an envelope addressed to the Commissioner of Patents, Washington, D.C. 20231.

September 12, 2001
Date of Deposit

Signature of registered practitioner or other person
having reasonable basis to expect mailing to occur
on date of
deposit shown pursuant to 37 C.F.R. § 1.8(a)(1)(ii)

Deidra Pfeil
Typed/printed name of person whose signature is
contained
above

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
Washington, D.C. 20231

Sir:

In compliance with the duty to disclose information material to patentability pursuant to 37 C.F.R. § 1.56, it is respectfully requested that this Information Disclosure Statement be entered and the documents listed on attached Form PTO-1449 be considered by the Examiner and made of record. Copies of the listed documents are enclosed pursuant to 37 C.F.R. § 1.98(a).

In accordance with 37 C.F.R. § 1.97(g) and (h), filing of this Information Disclosure Statement is not to be construed as a representation that a search has been made or an admission that the information cited herein is, or is considered to be, material to patentability as defined in 37 C.F.R. § 1.56(b). Further, no representation is made by Applicant herein that no other possible material information as defined in 37 C.F.R. § 1.56(b) exists.

DOCUMENTS

U.S. Patent Documents

| <u>U.S. Patent No.</u> | <u>Issue Date</u> | <u>Inventor</u> |
|------------------------|--------------------|--------------------|
| 3,932,934 | January 20, 1976 | Lynch et al. |
| 4,142,286 | March 6, 1979 | Knuth et al. |
| 4,528,747 | July 16, 1985 | Hoffman et al. |
| 5,688,127 | November 18, 1997 | Staab et al. |
| 4,722,135 | February 2, 1988 | Read |
| 4,733,462 | March 29, 1988 | Kawatani |
| 4,810,154 | March 7, 1989 | Klemmer et al. |
| 4,940,181 | July 10, 1990 | Juskey, Jr. et al. |
| 4,975,079 | December 4, 1990 | Beaman et al. |
| 4,985,107 | January 15, 1991 | Conroy et al. |
| 5,006,792 | April 9, 1991 | Malhi et al. |
| 5,034,802 | July 23, 1991 | Liebes, Jr. et al. |
| 5,051,339 | September 24, 1991 | Friedrich et al. |
| 5,051,813 | September 24, 1991 | Schneider et al. |
| 5,056,216 | October 15, 1991 | Madou et al. |
| 5,074,036 | December 24, 1991 | Dunaway et al. |
| 5,155,905 | October 20, 1992 | Miller, Jr. |
| 5,164,818 | November 17, 1992 | Blum et al. |
| 5,189,507 | February 23, 1993 | Carlomagno et al. |

Attorney Docket: 4348US (MUEI-0547.00/US)

| | | |
|-----------|--------------------|-------------------|
| 5,203,075 | April 20, 1993 | Angulas et al. |
| 5,255,431 | October 26, 1993 | Burdick |
| 5,329,423 | July 12, 1994 | Scholz |
| 5,337,219 | August 9, 1994 | Carr et al. |
| 5,376,010 | December 27, 1994 | Petersen |
| 5,400,220 | March 21, 1995 | Swamy |
| 5,403,671 | April 4, 1995 | Holzmann |
| 5,435,482 | July 25, 1995 | Variot et al. |
| 5,435,732 | July 25, 1995 | Angulas et al. |
| 5,442,852 | August 22, 1995 | Danner |
| 5,446,960 | September 5, 1995 | Isaacs et al. |
| 5,453,581 | September 26, 1995 | Liebman et al. |
| 5,459,287 | October 17, 1995 | Swamy |
| 5,463,191 | October 31, 1995 | Bell et al. |
| 5,477,086 | December 19, 1995 | Rostoker et al. |
| 5,477,933 | December 26, 1995 | Nguyen |
| 5,521,427 | May 28, 1996 | Chia et al. |
| 5,526,974 | June 18, 1996 | Gordon et al. |
| 5,528,461 | June 18, 1996 | Gore et al. |
| 5,556,293 | September 17, 1996 | Pfaff |
| 5,578,870 | November 26, 1996 | Farnsworth et al. |
| 5,611,705 | March 18, 1997 | Pfaff |
| 5,637,008 | June 10, 1997 | Kozel |
| 5,637,919 | June 10, 1997 | Grabbe |
| 5,639,323 | June 17, 1997 | Jordan |
| 5,646,447 | July 8, 1997 | Ramsey et al. |
| 5,669,774 | September 23, 1997 | Grabbe |

Attorney Docket: 4348US (MUEI-0547.00/US)

| | | |
|------------|--------------------|---------------------|
| 5,691,041 | November 25, 1997 | Frankeny et al. |
| 5,702,255 | December 30, 1997 | Murphy et al. |
| 5,716,222 | February 10, 1998 | Murphy |
| 5,726,502 | March 10, 1998 | Beddingfield |
| 5,730,606 | March 24, 1998 | Sinclair |
| 5,767,580 | June 16, 1998 | Rostoker |
| 5,770,891 | June 23, 1998 | Frankeny et al. |
| 5,796,590 | August 18, 1998 | Klein |
| 5,805,427 | September 8, 1998 | Hoffman |
| 5,810,609 | September 22, 1998 | Faraci et al. |
| 5,829,988 | November 3, 1998 | McMillan et al. |
| 5,887,344 | March 30, 1999 | Sinclair |
| 5,895,554 | April 20, 1999 | Gordon |
| Re. 36,217 | June 1, 1999 | Petersen |
| 5,924,622 | July 20, 1999 | Davis et al. |
| 5,930,889 | August 3, 1999 | Klein |
| 5,947,751 | September 7, 1999 | Massingill |
| 5,955,888 | September 21, 1999 | Frederickson et al. |
| 5,983,477 | November 16, 1999 | Jacks et al. |
| 6,018,249 | January 25, 2000 | Akram et al. |
| 6,026,566 | February 22, 2000 | Urban et al. |
| 6,036,503 | March 14, 2000 | Tsuchida |
| 6,037,667 | March 14, 2000 | Hembree et al. |
| 6,040,618 | March 21, 2000 | Akram |
| 6,042,387 | March 28, 2000 | Jonaidi |
| 6,084,781 | July 4, 2000 | Klein |

Other Documents

Karl J. Puttlitz et al., *C-4/CBGA Comparison with Other MLC Single Chip Package Alternatives*, IEEE Transactions on Components, Packaging and Manufacturing Technology-Part B, Vol. 18, No. 2, May 1995, Pages 250-256.


Lewis S. Goldmann, *Statistical Model for the Inherent Tilt of Flip-Chips*, Transactions of the ASME, Vol. 118, March 1996, Pages 16-20.

Patrick J. Nasiatka et al., *Determination of Optical Solder Volume for Precision Self-Alignment of BGA using Flip-Chip Bonding*, Department of Electrical and Electronic Engineering, The Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong.

Applicant offers to supply any explanation or discussion of the documents which the Examiner feels is necessary or desirable and which is requested.

This Information Disclosure Statement is filed within three (3) months of the filing date of the above-identified application, and no certification pursuant to 37 C.F.R. § 1.97(c) or a fee pursuant to 37 C.F.R. 1.17(p) is required.

Respectfully submitted,



Bradley B. Jensen
Registration No. 46,801
Attorney for Applicant
TRASKBRITT, PC
P. O. Box 2550
Salt Lake City, Utah 84110-2550
Telephone: (801) 532-1922

Date: September 12, 2001

BBJ/djp

Enclosures: Form PTO-1449
Copy of documents cited